Anatomy and Physiology test

This test consists of 50 questions. Encircle the one correct answer.

1. Which plane of the body divides it into dorsal and ventral regions?

    A. Transverse
    B. Axial
    C. Coronal
    D. Sagittal

2. The directional term “superior” in anatomy means which of the following?

    A. cephalic
    B. ventral
    C. caudal
    D. dorsal

3. Which of the stated relationships is correct?

    A. the heart is superior to the large intestine
    B. the shoulder is distal to the metacarpals
    C. the phalanges are proximal to the carpals
    D. the eye is medial to the nose

4. Where are sebaceous glands found?

    A. In the digestive system
    B. In the hypodermis
    C. In the dermis
    D. In the stratum corneum

5. Which of the following lists layers of the integument in the order from most superficial first, to deep?

    A. epidermis, hypodermis, dermis
    B. epidermis, papillary dermal layer, reticular dermal layer.
    C. dermis, stratum germinativum, stratum corneum
    D. stratum corneum, stratum germinativum, epidermis.

6. One of the following statements about the stratum corneum is correct. Which one?

    A. cells in this layer undergo cell division to replace the skin.
    B. it consists of dead cells.
    C. it contains collagen, elastin and reticular fibres.
    D. the layer has sensory receptors known as Merkel discs, Meissner’s and Pacinian corpuscles.

7. By what name is the plasma membrane of a muscle cell known?

    A. sarcoplasm
    B. sarcomere
    C. sarcoplasmic reticulum
    D. sarcolemma

8. Of the events that lead to myofilaments sliding over each other, which of the following happens first?

    A. The myosin head engages with the binding site on actin
    B. Troponin changes shape and pulls on tropomyosin
    C. Calcium ions enter the cell cytoplasm
    D. ATP is hydrolysed to ADP and inorganic phosphate

9. Which list is in the correct order of DECREASING size?

    A. muscle fibre, sarcomere, myofilament, myofibril.
    B. muscle, fasciculus, muscle fibre, myofibril.
    C. sarcomere, fasciculus, myofibril, myofilament.
    D. muscle, muscle fibre, myosin, myofibril.

10. Synovial joints differ from the other types of joint between bones in the body because:

    A. they are immovable joints.
    B. they are slightly moveable
    C. the bones are joined by cartilage.
    D. the ends of the articulating bones are covered by hyaline cartilage.

11. What is the structure that attaches one bone to another?

    A. ligament
    B. cartilage
    C. tendon
    D. diaphysis

12. What is the function of the cilia on the cells that line the bronchial tree?

    A. They help mix the inhaled fresh air with the residual air contained in the bronchi al tree.
    B. They slow the movement of air to allow for efficient exchange of gases.
    C. They move the mucus on the cell surface up out of the bronchi al tree.
    D. They filter particles from inhaled air.

13. One of the following statements is correct. Which one?

    A. The visceral pleura is attached to the chest wall and the parietal pleura is attached to the lung.
    B. The two lungs and their associated structures are known as the pneumothorax.
    C. The hilum is a serous membrane that surrounds each lung separately.
    D. A negative pressure is maintained between the two lung pleura.

14. What term is applied to the volume of air that moves into the lungs while breathing at rest?

    A. anatomical dead space
    B. inspiratory reserve capacity
    C. tidal volume
    D. residual volume

15. Which molecule or ion dissolved in blood is able to stimulate the central chemoreceptors of the brain's respiratory centre?

    A. CO_2
    B. H_3O^+
    C. O_2
    D. Ca^{++}

16. Which of the following statements could be applied to "external respiration"?

    A. Exchange of gases between alveolar air and the blood in pulmonary capillaries.
    B. Exchange of dissolved gases between blood in tissue capillaries and the body tissues.
    C. The production of CO_2 from organic molecules in the cells by using O_2 .
    D. The inhalation of atmospheric air into the lungs followed by exhalation.

17. What is meant by a diastolic blood pressure of 100 mm Hg?

    A. the maximum pressure at the start of the aorta during ventricular contraction.
    B. the minimum pressure at the start of the aorta before the start of a ventricular contraction.
    C. the maximum pressure at the start of the aorta and pulmonary trunk during ventricular contraction.
    D. The minimum blood pressure measured when resting.

18. If Sarah has a stroke volume of 70 ml and a cardiac output of 5950 ml/min, which of the following is her heart rate (in beats/min)?

    A. 70
    B. 75
    C. 80
    D. 85

19. Which of the following events occur during early ventricular systole?

    A. the atria are relaxed, the ventricles are filling passively, the atrioventricular valves are open
    B. the ventricles are starting to contract, the atrioventricular valves are closed, the semilunar valves are closed
    C. the atria contract, the ventricles are relaxed, the atrioventricular valves are open
    D. the atria are relaxed, the ventricles are starting to relax, the atrioventricular valves are opening, the semilunar valves are closing.

20. When cardiac ejection ceases during diastole, what is the most important factor maintaining blood flow in arteries of the body?

    A. Contraction of skeletal muscle
    B. Closing the venous valves
    C. Elastic recoil of the arteries close to heart
    D. Contraction of the atria

21. In which organs would be found continuous, fenestrated, and sinusoid capillaries, respectively?

    A. Brain, small intestine, liver
    B. Bone marrow, brain, spleen
    C. Liver, bone marrow, brain
    D. Small intestine, liver, brain

22. Blood flow is largely regulated at a tissue level. Which of the following could be said regarding this process?

    A. A rise in the blood level of O_2 will result in vasodilation
    B. A raised CO_2 level results in vasodilation
    C. Acidaemia directly increases vasopressin (ADH) release
    D. A raised CO_2 blood level will result in an increased serum alkalinity

23. Which of the following glands are accessory organs of the digestive system?

    A. adrenal glands
    B. pancreatic islets
    C. gastric glands
    D. salivary glands

24. What is the role of gastrin in the digestive system?

    A. to stimulate release of bile and pancreatic juice
    B. to stimulate gastric secretion
    C. to activate pepsinogen
    D. to hydrolyse proteins to polypeptides

25. What are the end products of carbohydrate digestion?

    A. chylomicrons
    B. amino acids
    C. free fatty acids
    D. monosaccharides

26. What feature of the small intestine enhances its ability to absorb digested food?

    A. its large surface area
    B. the gaps between adjacent epithelial cells
    C. secretion of the hormone absorptin
    D. its longer length compared to the large intestine

27. The products of fat digestion are absorbed into the epithelial cells of the intestinal wall differently from the way products of protein and carbohydrate digestion are. The reason is:

    A. the products of protein and carbohydrate digestion are smaller.
    B. the products of fat digestion are actively transported across the plasma membrane.
    C. the products of fat digestion are smaller.
    D. monoglycerides are soluble in the plasma membrane.

28. Solutes move from the blood in the glomerular capillaries into the Bowman's capsule due to which of the following influences?

    A. osmotic pressure difference
    B. diffusion down the concentration gradient
    C. by active transport
    D. hydrostatic pressure difference

29. Which material is actively reabsorbed from the filtrate in the kidney tubule?

    A. Na^+
    B. HCO_3^-
    C. Cl^-
    D. H_2O

30. Which material is secreted into the filtrate in the kidney tubule?

    A. H_2O
    B. urea
    C. Na^+
    D. albumin

31. How does the composition of the filtrate change as it travels through the loop of Henle?

    A. In the ascending limb, the volume decreases and in the descending limb, the concentration increases.
    B. In the descending limb, the volume decreases and in the ascending limb, the concentration decreases.
    C. In the descending limb, the volume decreases and in the ascending limb, the concentration increases.
    D. In the ascending limb, the volume decreases and in the descending limb, the concentration decreases.

32. Sperm gain motility as they pass through which structure? The…

    A. Lumen of the seminiferous tubule
    B. Prostatic part of the urethra
    C. Ductus deferens
    D. Epididymis

33. After ejaculation, sperm travel through the structures of the female reproductive tract in which order?

    A. Vagina, uterus, fallopian tube, ovary.
    B. Cervix, vagina, uterus, fallopian tube.
    C. Vagina, cervix, uterus, fallopian tube.
    D. Cervix, urethra, uterus, fallopian tube.

34. What is the section of the male reproductive tract within which sperm are produced called?

    A. the urethra
    B. the epididymis
    C. the vas deferens
    D. the seminiferous tubules

35. Which statement below about hormones is true?

    A. Hormones are enzymes that catalyse reactions
    B. Hormones are released into the blood circulation
    C. Hormones affect all cells of the body
    D. Hormones are released by neurones at synapses

36. What hormone does the thyroid produce?

    A. thyroid stimulating hormone
    B. calcitriol
    C. thyroxine
    D. parathyroid hormone

37. What hormone(s) does the adrenal medulla produce?

    A. aldosterone
    B. epinephrine and norepinephrine
    C. corticosteroids
    D. glucocorticoids

38. What is produced by the beta cells of the pancreas?

    A. angiotensin converting enzyme
    B. glucocorticoids
    C. glucagon
    D. insulin

39. Which gland or organ releases erythropoietin?

    A. The kidneys
    B. The adrenal glands
    C. The anterior pituitary
    D. The pancreas

40. Inactive muscle and nerve cells maintain a resting membrane potential. This potential results in:

    A. the outside of the cell being negative
    B. the inside of the cell being positive
    C. the inside and outside of the cell having the same charge
    D. the inside of the cell being negative

41. When an action potential arrives at a synapse, what happens first?

    A. a neurotransmitter is released into the synaptic cleft
    B. extracellular Na^{+} crosses the post-synaptic membrane
    C. Choline in the synaptic cleft enters the nerve cell and is converted to acetyl choline
    D. extracellular Ca^{++} enters the nerve cell

42. Which four structures together make up the brain?

    A. cerebrum, diencephalon, brainstem and cerebellum
    B. cerebrum, thalamus, brainstem and cerebellum
    C. cerebrum, diencephalon, meninges and cerebellum
    D. spinal cord, diencephalon, brainstem and medulla oblongata

43. Spinal nerves are formed from a dorsal root and a ventral root. What is true of the ventral root?

    A. they contain sensory neurons carrying afferent impulses
    B. they contain sensory neurons carrying efferent impulses
    C. they contain motor neurons carrying afferent impulses
    D. they contain motor neurons carrying efferent impulses

44. What do “sympathetic” and “parasympathetic” divisions refer to?

    A. the central nervous system
    B. the efferent neurons of the peripheral nervous system
    C. the autonomic nervous system
    D. the somatic nervous system

45. Which statement about the sympathetic and/or parasympathetic divisions is correct?

A. All sympathetic neurons release ACh as a neurotransmitter.
B. Sympathetic division fibres emerge from brain & sacral spinal cord.
C. Parasympathetic division stimulates adrenal gland to release norepinephrine & epinephrine.
D. Some organs are innervated by both sympathetic division and parasympathetic division.

46. Nociceptors are sensitive to…

A. …pain.
B. …light touch.
C. …vibration.
D. …osmotic pressure.

47. Sensory receptors that monitor the position of joints are called

A. nociceptors.
B. chemoreceptors.
C. proprioceptors.
D. baroreceptors.

48. Choose the answer that correctly completes the sentence. The “lens” of an eye…

A. …is biconcave
B. …is responsible for all of the refraction of the light entering the eye.
C. …lies anterior to the corpus vitreum
D. …is part of the anterior eye chamber

49. What are lymphocytes? Blood cells that:

A. mature and proliferate in the bone marrow.
B. contain haemoglobin.
C. are involved in the body’s immune response
D. mature into macrophages.

50. Which blood cells are involved in protecting the body from pathogens and foreign cells?

A. erythrocytes
B. leucocytes
C. platelets
D. haemoglobin